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If we allow, out of the nine hundred and thirty-two adults, the large proportion two hundred and sixty to be unmarried, we will have an average result of only two children in every family. The mortality of the race being much greater than the increase in population (being about equally divided between the two sexes) the Moquis are rapidly passing away. In the last quarter of a century there has been a decrease of five thousand in their entire number. After the lapse of the next score or so of years the race will most probably have become extinct.

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HUNTING AMBLYCHILA.[1]

BY PROFESSOR F. H. SNOW.

IN considering the unintelligibility of the title of this paper to one who is not a professional entomologist, I am reminded of a brief dialogue which occurred between Mr. Foster, a member of my last summer's collecting party, and a cow-boy of the plains, who passed by one evening while Mr. Foster was looking for specimens. After watching him for some moments with great curiosity, the cow-boy asked: "What you doing?" Mr. Foster replied: "Hunting Amblychila." The cow-boy, bewildered, inquired again: "Ambly Cheila, — who 's she?" "Who she is" it will be the object of this paper in some measure to explain.

In 1823 the famous entomologist Thomas Say discovered a single dead specimen of this insect "near the base of the Rocky Mountains." Twenty-nine years later a second specimen, also dead, was found by one of the United States surveying expeditions. The remarkable structure and extreme rarity of this beetle made it "*facile princeps*" among American insects, and its possession was eagerly desired and earnestly sought by our foremost entomologists. But many difficulties lay in the pathway of those who would gain the coveted prize. The regions in which the two specimens had been captured were practically inaccessible to the entomologist. No railroad had then entered the vast country west of the Missouri River, and hostile bands of Indians were at all times in readiness to massacre the reckless adventurers who should dare to traverse their hunting-grounds without a powerful military escort. A national expedition for the survey of our immense unoccupied domains might obtain the needed protection by government authority. But what professional " bug-hunter " could hope for membership of such an expedition, — much less aspire to the requisite military escort for an expedition of his own for the sole purpose of hunting an insect, however rare and however valuable in the estimation of entomologists ?

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[1] Read at the annual meeting of the Kansas Academy of Science, October 12, 1877, by Professor F. H. Snow, of the Kansas University.

But notwithstanding the inaccessibility of the plains to collectors of insects, several attempts were made to overcome this difficulty. A distinguished American entomologist, not many years after the discovery of the second specimen of Amblychila in 1852, issued a circular containing a description and life-size figure of the beetle, and distributed it among the army surgeons at the various military posts in the Western Territories. Several additional specimens were in this way obtained, and several others were brought in by some of the more recent government expeditions.

But *Amblychila cylindriformis* continued to be the rarest and the costliest of American Coleoptera. It could hardly be purchased for museums at any price, and not more than two years ago no less than fifteen and twenty dollars were eagerly paid for a single specimen. Indeed, a price-list of North American Coleoptera, issued at Cambridge only eight months ago, quotes the subject of this paper at twelve dollars per specimen.

Two causes, however, have recently conspired to bring out the fact that this insect is by no means the same rarity in nature as in entomological collections. In the first place the removal of the Indian tribes from Kansas soil to distant reservations has made it possible for the collector of insects to visit the plains without incurring the imminent danger of losing his scalp ; and in the second place the discovery of the crepuscular and nocturnal habits of *Amblychila* has led to the capture of great numbers of specimens during the past season. This discovery, which had been predicted by Dr. Le Conte, was actually made in the summer of 1876 by Messrs. H. A. Brous and S. W. Williston of the Yale College Geological Expedition to Western Kansas, in charge of Professor B. F. Mudge. The members of this party obtained about one hundred specimens. During the present season several hundred specimens have been taken by Messrs. Williston and Cooper of the Yale Expedition, and by the Kansas University Expedition in charge of the writer. It is more than probable that the present year has been unusually favorable to the occurrence of this insect, and that subsequent seasons may prove, like the season of 1876, less productive of specimens. It is a well-known fact that a species may occur in abundance for a single year and then become comparatively rare or altogether unknown for several years in succession. This law will doubtless be found to apply to Amblychila as well as to other insects.

I was disappointed to find this insect apparently devoid of that intensely ferocious nature which had been ascribed to it by sensational writers for the Eastern press, and which would be suggested by its position at the head of a ravenous family of beetles, the *Cicindelidæ* or tiger-beetles. I have watched these insects night after night coming forth from their hiding-places soon after sundown and beginning their night-long search for food. I am satisfied that their sense of sight must be exceedingly deficient, as they never discover their prey from a distance, however slight, and never capture it unless stumbling upon it as if by accident. When, however, they do thus stumble upon an unfortunate caterpillar, grasshopper, or other suitable article of food, a very acute sense of touch, chiefly concentrated in their long and constantly vibrating antennæ, enables them to seize upon and firmly hold it with their powerful, strongly-toothed mandibles, while with their maxillæ or secondary jaws they withdraw the life-juices and soft tissues of their struggling victim. They also manifest the imperfection of their vision by making no attempt to escape from their human captors, allowing themselves to be picked up as if entirely blind.

They are slow in their movements, walking about with great deliberation over their favorite hunting-grounds, the sloping clay banks. The only approach to rapidity of motion observed during the summer was in the case of a single individual suddenly surprised by the morning sun while at a distance from a suitable hiding-place, which he was making frantic exertions to discover.

In a brief article contributed to this Academy at our last annual meeting it was stated by Mr. Brous that these insects "live in holes generally made by themselves." My own observations do not corroborate this statement. On the other hand I found them invariably coming forth at night from holes made by other animals, — most especially from the intricately winding burrows of the kangaroo rat (*Dipodomys Philippii*), by which the clay banks are often completely honeycombed. In these burrows they take refuge from the direct rays of the sun in the day-time, in company with other nocturnal genera, — Eleodes, Pasimachus, etc. These latter insects undoubtedly furnish many a diurnal meal for Amblychilæ, which are not to be supposed to pass the day in sleep. On one occasion I had an opportunity of watching two of them in a large, abandoned badger's burrow. They were wide awake, and walking about with vibrating antennæ as if in search of food. I have also kept several living specimens in confinement for several weeks, but never discovered any disposition to make excavations for themselves, though they would gladly take possession of holes made for them in the earth at the bottom of their cage.

In regard to food, no living insect seems to come amiss to them. They seem to be especially fond of all sorts of lepidopterous and orthopterous larvæ. I have seen them seizing and devouring the huge wingless locusts (*Brachypeplus*) and the sword-bearers (*Ensicaudes*). I observed one individual in the act of conquering and devouring the large Prionus of the plains (*P. fissicornis*), and in two instances have seen them eating one another, apparently with the greatest relish. In confinement they will thrive upon full-grown maple worms (*Dryocampa alba*), the caterpillars of the handmaid moth (*Datana ministra*), and upon almost every other insect pest of the orchard and garden.

But while thus visiting the death penalty upon every member of his class with which he comes in contact, our voracious hero is himself a choice article of diet to at least one carnivorous quadruped of the plains. Mr. J. M. Walker, one of the members of my party, while patroling his accustomed beat one morning before sunrise, discovered the fresh fragments of several half-eaten Amblychilæ scattered along his route, as if some predatory animal had but just preceded him and made his breakfast upon the rarities which otherwise would have found their way into the collecting-bottle. On the evening of the same day, Mr. Walker, while collecting in the same locality, was violently attacked by a rabid skunk twice in immediate succession. The next morning Mr. Foster, the other student of the party, was similarly attacked on a neighboring clay bank, and had the good fortune to kill his assailant. An examination of the contents of the animal's stomach disclosed the remains of freshly eaten Amblychilæ. It would thus appear that this ill-odored quadruped has an original claim to the title of Amblychila hunter, and is ready at the proper time to vindicate the claim against human contestants. This fact will merit the serious attention of entomologists who may hereafter visit the plains, since the bite of the rabid skunk has proved fatal to man in more than nine cases out of ten, and there are more than fifty fatal cases on record. In this connection may be mentioned another danger which must be incurred by the collector of insects upon the plains. I refer to the bite of the rattlesnake, which venomous reptile abounds in Western Kansas and Eastern Colorado, and was encountered nearly every day by some member of our expedition.

REMARKS CONCERNING TWO DIVISIONS OF INDIANS INHABITING ARIZONA, NEW MEXICO, UTAH, AND CALIFORNIA.

BY DR. EDWARD PALMER.

HAVING traveled extensively in that part of the United States acquired from Mexico, and having examined the so-called ancient graves and mounds, as well as studied the Indians now living in the same region, I have come to the conclusion that this region was formerly inhabited by two divisions or classes of Indians, distinguishable by their modes of burial — one burning, the other inhuming, the corpses — and by their dwellings and domestic arts. In the same region are to be found graves which do not belong to the Indians now living there, and containing either the bodies or ashes of human beings whose epoch we have no means of determining.

The Indians found in the city of Mexico, and said by the Spanish historians to offer up human sacrifices to their gods, were only observing their usual custom of burning their dead. The Spaniards killed them in great numbers, and the Indians in burning the dead afforded their enemies, the Spaniards, the grounds for notions out of which to make religious capital. So the priests and officers magnified this simple custom, and by declaring the Indians to be idolaters and sacrificers of human beings they did them a grave injustice.

The Spaniards in their conquests always kept in view the maxim that the means justify the end. To ascribe the burning of the dead to offering up human sacrifices to gods was sufficient to gain the desired object, as the church would be aroused at once to send out missionaries to convert the heathen and establish religious orders among them.

Concluding that the Indians found living in the city of Mexico at the time of the Spanish conquest were Aztecs or crema-